

IN THE DRAWINGS

The Applicants hereby submit formal drawings to replace the original informal drawings, as indicated by "Replacement Sheets." These formal drawings were previously submitted on January 15, 2003, but are enclosed again for the convenience of the Examiner.

REMARKS

In the Office Action, the Examiner rejected claims 1-29. By the present response, the Applicants cancel claim 20, add new claims 30-39, and amend claims 1, 21, 28, and 29 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 1-19 and 21-39 remain pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Drawings

The Examiner objected to the informal drawings submitted with the application and requested formal drawings. Applicants previously submitted formal drawings on January 15, 2003. Applicants enclose another copy of the drawings for convenience of the Examiner.

Rejections Under 35 U.S.C. § 101

Claim 1-29 were rejected under 35 U.S.C. §101, because the claimed invention is directed to non-statutory subject matter. Applicants have amended independent claims 1, 21, and 29 to clarify certain aspects of the claimed subject matter. Applicants respectfully submit that amended independent claims 1, 21 and 29 are useful, tangible, and concrete and are in condition for allowance.

Rejections Under 35 U.S.C. § 112

Claim 20 was rejected under U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Applicants disagree with the rejection. However, Applicants respectfully cancel claim 20 to expedite allowance of the present application.

Rejections Under 35 U.S.C. § 102

Claims 1-20 and 28 were rejected under 102(e) as being anticipated by Lystad et al. (U.S.PG-PUB 2005/0192783, hereinafter “Lystad”). Applicants respectfully traverse this rejection.

Legal Precedent

First, the pending claims must be given an interpretation that is reasonable and consistent with the *specification*. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); see also M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is “the primary basis for construing the claims.” See *Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. See *id.*

Second, interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. See *In re Cortright*, 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. “The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” See *Collegenet, Inc. v. ApplyYourself, Inc.*, No. 04-1202, -1222, 1251, at 8-9 (Fed. Cir. August 2, 2005) (quoting *Phillips*, No. 03-1269, -1286, at 16). The Federal Circuit has made clear that derivation of a claim term must be based on “usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art.” See *id.*

Third, anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference.

In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Fourth, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.* Regarding functional limitations, the Examiner must evaluate and consider the functional limitation, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. *See* M.P.E.P. § 2173.05(g); *In re Swinehart*, 169 U.S.P.Q. 226, 229 (C.C.P.A. 1971); *In re Schreiber*, 44 U.S.P.Q.2d 1429, 1432 (Fed. Cir. 1997). If the Examiner believes the functional limitation to be inherent in the cited reference, then the Examiner “must provide some evidence or scientific reasoning to establish the reasonableness of the examiner’s belief that the functional

limitation is an inherent characteristic of the prior art.” *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Inter. 1986).

Features of Independent Claims 1 and 28 Omitted from Lystad

Turning to the claims, the present independent claim 1 recites, *inter alia*, “receiving a user simulation scenario from a user, wherein: said user simulation scenario is in a-cyclic graph format and includes a plurality of material development modules represented as vertices including a starting module.”

First, the cited reference does not teach or suggest “a plurality of material development modules,” as recited by independent claim 1. As indicated above, the specification is “the primary basis for construing the claims.” *See Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.* As recited in para [0018] of the present application:

Examples of materials modules 110 include software tools to perform the following functions: γ ¹ precipitation, grain size, phase analysis and grain growth modeling. Property modules 112 can include modules to perform functions such as flow stress, low cycle fatigue (LCF), ultimate tensile strength (UTS), creep and tensile modeling. Any cost and performance models 114 known in the art (e.g., COMPEAT from General Electric Company) can be utilized with an embodiment of the present invention.

Application, page 6, para [0018] (emphasis added).

In sharp contrast, the cited reference discloses:

One or more perimeter nodes 12a (not having any upstream nodes 12) may represent sources of materials such as raw materials, inventory, work-in-progress, purchase orders, or future procurements from vendors. One or more other perimeter nodes

12a (not having any downstream nodes 12) may represent customer orders for a product being manufactured.

Lystad et al., page 2, para [0018] (emphasis added).

Hence, Lystad does not teach or even suggest implementing material development modules as recited in the claims. In view of these deficiencies, the cited reference cannot anticipate amended independent claim 1 and its dependent claims.

Second, the present independent claim 28 recites, *inter alia*, “receive a user simulation scenario from a user, wherein: said user simulation scenario is in a-cyclic graph format and includes a plurality of material development modules represented as vertices including a starting module.”

The cited reference does not teach or even suggest “a plurality of material development modules,” as recited by independent claim 28. As recited in para [0018] of the application:

Examples of materials modules 110 include software tools to perform the following functions: γ^1 precipitation, grain size, phase analysis and grain growth modeling. Property modules 112 can include modules to perform functions such as flow stress, low cycle fatigue (LCF), ultimate tensile strength (UTS), creep and tensile modeling. Any cost and performance models 114 known in the art (e.g., COMPEAT from General Electric Company) can be utilized with an embodiment of the present invention.

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Lystad et al., page 2, para [0018] (emphasis added).

Hence, Lystad does not teach or even suggest implementing material development modules as recited by independent claim 28. In view of these deficiencies, the cited reference cannot anticipate amended independent claim 28 and its dependent claims.

Rejections Under 35 U.S.C. § 103

Claims 21-27 and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lystad in view of Wang, Lihui et al. ("A Java 3D-Enabled Cyber Workspace." Communications of the ACM. Nov. 2002, Vol. 45, Issue 11, pp. 45-49, hereinafter "Wang") and further in view of Chawla, R. et al. "A Virtual Environment for Simulating Manufacturing Operations in 3D. "Proc. of the 2001 Winter Simulation Conf., Jan 9-12, 2001. Vol. 2, pp. 991-997, hereinafter "Chawla"). The Applicants respectfully traverse these rejections.

Legal Precedent

First, the burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d. 1430 (Fed. Cir. 1990). Accordingly, to establish a *prima facie* case, the Examiner must not only show

that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). The Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). Moreover, a statement that the proposed modification would have been “well within the ordinary skill of the art” based on individual knowledge of the claimed elements cannot be relied upon to establish a *prima facie* case of obviousness without some *objective reason to combine* the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993); *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d. 1313, 1318 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d. 1161 (Fed. Cir. 1999).

Second, when prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The Federal Circuit has warned that the Examiner must not, “fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *In re Dembiczak*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)).

Third, it is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir.

1983); M.P.E.P. § 2145. Moreover, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. § 2143.01(VI). If the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *see* M.P.E.P. § 2143.01(V).

Features of Independent Claim 21 Omitted from Cited References

The present independent claim 21 recites, *inter alia*, “receive a user simulation scenario from a user system via said network, wherein: said user simulation scenario is in a-cyclic graph format and includes a plurality of material development modules represented as vertices including a starting module.” The cited references, taken alone or in hypothetical combination, do not teach or even suggest the foregoing claim features of independent claim 21. In view of this deficiency, the Applicants respectfully stress that independent claim 21 and its dependent claims are currently in condition for allowance.

Features of Dependent Claim 29 Omitted from Cited References

Claim 29 depends from independent claim 28, which also recites “a plurality of material development modules.” Thus, claims 28 and 29 are allowable for the same reasons as discussed above with reference to claim 21.

Wang is not necessarily a prior art reference

The listed date on Wang is November 2002 and the filing date of the application is November 14, 2002. There is no mention of a specific date of publication for the cited reference. As disclosed in M.P.E.P. Section 2128, “Printed Publications as Prior Art”:

An electronic publication, including an on-line database or Internet publication, is considered to be a “printed publication” within the

meaning of 35 U.S.C. 102(a) and (b) provided the publication was accessible to persons concerned with the art to which the document relates.

Further, it discloses:

Prior art disclosures on the Internet or on an on-line database are considered to be publicly available as of the date the item was publicly posted. If the publication does not include a publication date (or retrieval date), it cannot be relied upon as prior art under 35 U.S.C. 102(a) or (b), although it may be relied upon to provide evidence regarding the state of the art.

M.P.E.P. § 2128.

Given that Wang does not provide specific date of publication, it is not clear that Wang is prior art relative to the November 14, 2002, filing date of the present application.

Improper Combination - Lack of Objective Evidence of Reasons to Combine

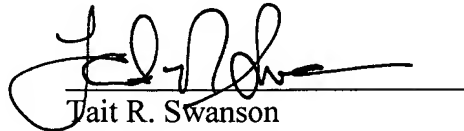
In addition, the Examiner has not shown the requisite motivation or suggestion to modify or combine the cited references to reach the present claims. As summarized above, the Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). In the present rejection, the Examiner combined the cited references based on the *conclusory and subjective statement* that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Lystad with those of Wang and Chawla, because all three references teach methods of simulating manufacturing processes by using directed acyclic graphs.” Office Action, page 11. Accordingly, Applicants respectfully request the Examiner to produce *objective evidence* of the requisite motivation or suggestion to combine the cited references, or remove the foregoing rejection under 35 U.S.C. § 103.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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